

and 20:00 h. L. M. T. and the relative humidity increased to 100 percent, remaining at that value during the display. At Saskatoon the temperature rose 28.5° F. between 06:00 h. and 20:00 h. L. M. T., and the relative humidity remained constant at about 100 percent. In the latter case warm, moist air was coming in, raising the air temperature, but was kept cooled to the dew point by the relatively cold snow surface. During the first display the mean temperature was 5.4° F., and during the second

—12.0° F. Observations taken so far show that the smaller crystals are formed at the lower temperatures.

It seems reasonable to assume that more complex halos are formed around artificial lights, but that they cannot be seen because of the general illumination. If a strong source of light could be placed far from other light sources many of the usual halo formations might be seen, and the crystals and atmospheric conditions causing them could be studied.

FLOODS, EARTH AND SNOW SLIDES, AND AN ICE STORM, FROM UNPRECEDENTED PRECIPITATION IN THE STATE OF WASHINGTON, JANUARY 1935

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All previous-recorded 24-hour and 5-day amounts of precipitation in the State of Washington were exceeded during a period which began with snow on January 21, 1935; and station records were broken for a number of places in northern Washington. In the western part of the State the snow turned to rain on the 21st or early on the 22d; rain followed in the colder eastern part of the State to a considerable elevation in the mountains. To the west and south of the Olympic Mountains, which are in extreme northwestern Washington, the following precipitation amounts were recorded: At Quinault, 12.00 inches on the 21st (mostly rain) and 37.00 inches in the 5-day period beginning that day; Elkpark, 12.00 inches in 26 hours—the 5-day period was incomplete; Spruce, 11.59 inches on the 21st, and 29.92 inches in the five days; Wynoochee Oxbow, 9.47 inches on the 21st and 29.91 inches in the five days. Previously the greatest 24-hour amount in the State was 8.16 inches. The total for January, 50.39 inches, is the greatest ever recorded in any month at Quinault. However, this amount has been exceeded at other stations in the State, notably by the 57.04 inches at Cougar for December 1933. East of the Cascade Range, in western Okanogan and northern Chelan Counties, the fresh fall of snow on the 21st was remarkable: At Winthrop, 52 inches; Gunn Ranch, 48; Stehekin, 44; and Stockdill Ranch, 40. The 52 inches of freshly fallen snow at Winthrop is the greatest record in Washington. It reduced to 4.16 inches of water.

Prior to the 21st, cold air under high pressure had spread from Alaska to the Pacific Northwest, while a barometric depression developed marked intensity off the coast. At the time of this precipitation the principal path of the warm moist air from the ocean which flowed over the cold air, was across southern British Columbia and northern Washington. Excessive rains and melting snows made rushing torrents of the rivers in the hills and mountains of the northwestern counties, and the lowlands were flooded. Floods in the northeastern part of the

State, however, were not serious, except in a few localities. Landslides occurred in many places where highways and streets had been graded, and on barren steep slopes. A number of snow slides were reported in the mountains. A 260 square mile sector of northwestern Whatcom County was visited by a very destructive ice or glaze storm, locally called a "silver thaw." This ice storm extended into Washington from British Columbia, and was caused by rain falling into a stream of cold air which was flowing down the Fraser River Valley from the very cold interior of British Columbia and (a part of it) into Whatcom County. It crossed the border in the region about Sumas moving west-southwest, missing Blaine on the north and Bellingham on the south. No temperature readings were made at Clearbrook from the 22d to the 24th, as the thermometer shelter was sealed by a coating of ice.

As a result of the severe weather conditions, four persons lost their lives. A man was buried in a snowslide in eastern Whatcom County, another was asphyxiated while keeping warm in his auto when entrapped between two snowslides in Snoqualmie Pass, and a woman and child were drowned near Burlington.

The total property loss, undoubtedly exceeding \$1,500,000, was greatest in the northwestern counties. The things damaged or destroyed included bridges, highways, pavements, bulkheads, sewers, homes and furnishings, farm buildings and contents, hay, grain, farm implements, road equipment, cattle, horses, sheep, hogs, poultry, orchards, trees, shrubs, fall-sown grain, meadows, pastures, fences, telephone, telegraph, and electric light poles and wires. There also was erosion of farm lands, and deep deposits of silt, gravel, and debris; destruction of dikes, which permitted salt water to overflow fertile soil; interruption of transportation of passengers, mails, express, and freight; the local closing of schools, mills, logging and road camps; reduced production of dairy and poultry products, and local suspension of business.